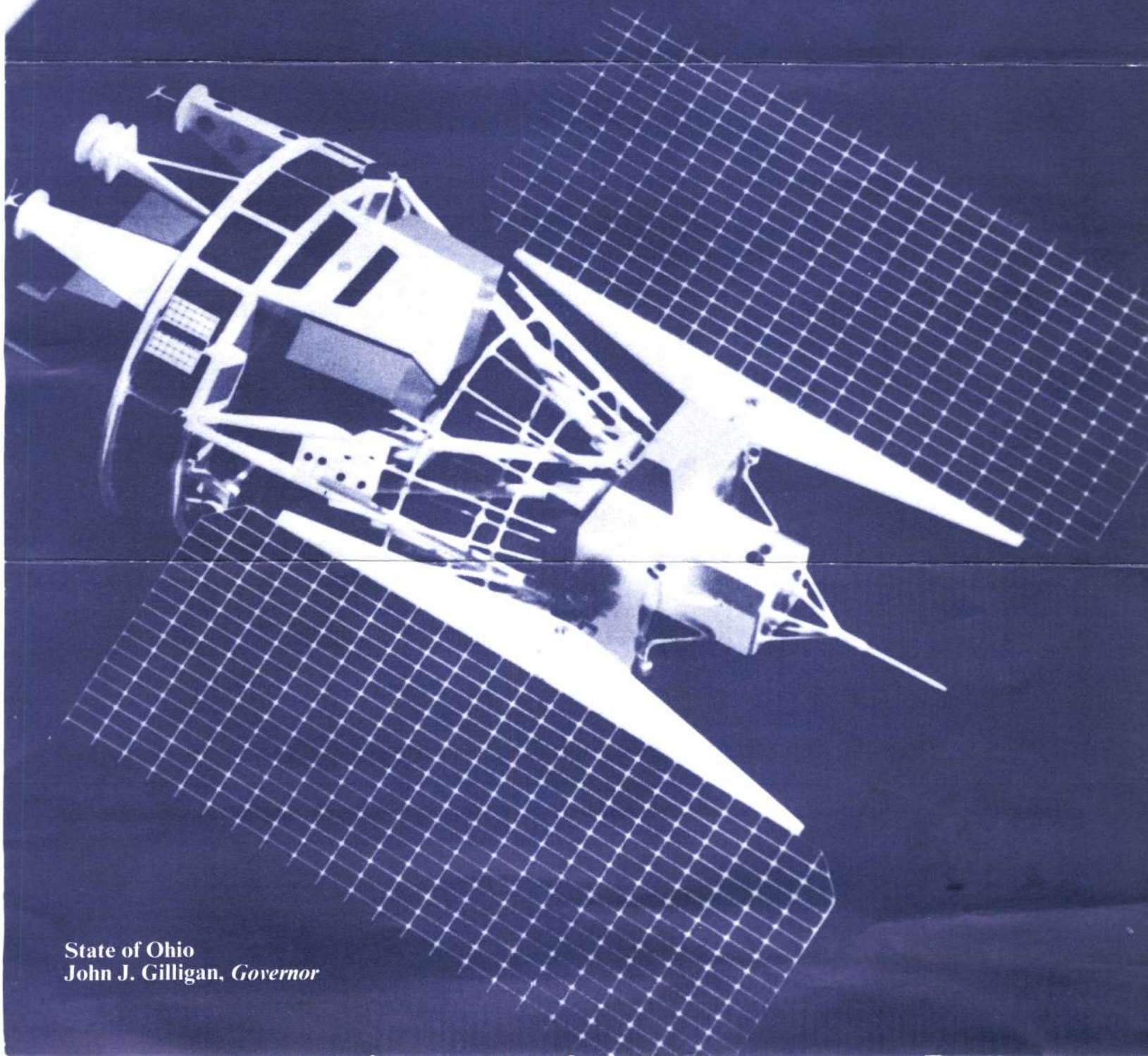
SATELLITES FOR OHIO'S FUTURE



State of Ohio
John J. Gilligan, *Governor*

SATELLITES FOR OHIO'S FUTURE

"The Ohio satellite effort is a major step toward wise resource management necessary for balanced development in Ohio."

David C. Sweet, Director
Ohio Department of Economic and Community Development

Ohio is entering the space-age with participation in a new satellite program designed to bring a better quality of life to Ohioans.

With the launching of the first satellite of the program on July 23, 1972 at Vandenburg Air Force Base in California, there is a greater chance that state authorities can detect dreaded concentrations of corn blight—measure air pollution levels—detect the urban sprawl strangling many cities—and determine whether strip-mine devastated land has been returned to its natural beauty.

WHAT CAN THIS SATELLITE DO FOR OHIO?

The basic function of the spacecraft is to photograph land areas. Ohio researchers will be using this photography to determine what useful environmental, natural and cultural resource information can be obtained. These people will also test the possibility of using the photographic data for future state environmental planning, monitoring and enforcement activities.

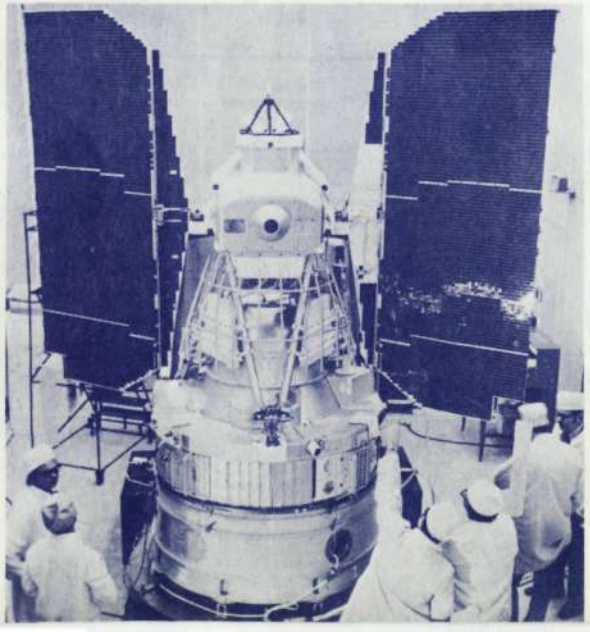
The Ohio satellite effort will concentrate on determining whether the satellite will be useful in three areas considered of major importance to Ohio:

- ***Environmental Quality***—detecting air pollution, shore erosion and sedimentation, and monitoring strip-mine reclamation progress;
- ***Agriculture and Forestry***—detecting crop conditions, projecting crop production levels, and helping conduct crop and timber surveys;
- ***Geography***—updating Ohio's land use map (Ohio does not have a complete aerial map of the state for planning purposes), topical map preparation and orthophoto (space-photo) mapping.

HOW IS OHIO PARTICIPATING?

Ohio is taking part through a contract with the National Aeronautics and Space Administration (NASA). The contract is almost entirely funded by the federal government. Ohio was awarded this opportunity because it presented an exemplary proposal for involving several state departments in a multi-disciplined look at solving the state's environmental and natural resource problems. Participating along with 43 other states and 31 foreign nations, Ohio is one of only a handful of states to take this potentially more productive approach. Participating state agencies are: Public Works, Development, Health, Highways, Agriculture, the Environmental Protection Agency, and Natural Resources, along with The Ohio State University.

The development department will have primary responsibility for this NASA program.



The Columbus Laboratories of Battelle will provide extensive technical support.

HOW WILL THE SATELLITE WORK?

This satellite is part of the Earth Resources Technology Satellite (ERTS) program developed by NASA. A new series of unmanned satellites, ERTS is the first to study actual application of sophisticated space technology to the increasing environmental and natural resource problems on earth. By 1973, ERTS will be manned. ERTS 1 will orbit the earth for about one year photographing the same portion of the earth every 18 days. Four pictures of Ohio will capture enough land mass to make an integral picture of the state. Photographs of Ohio will be compared with ground data from five sites across the state representative of the three major problem areas. The sites are located near East Liberty, in Ottawa County, in Wooster, in the Zaleski State Forest and in the Cleveland-Lake Erie area.

State of Ohio
John J. Gilligan, *Governor*

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E72-10144
CR-127329

ERTS DATA USER TYPE 1 PROGRESS REPORT FOR AUGUST/SEPTEMBER 1972

Project Title/Objective: Relevance of ERTS to the State of Ohio

Proposal Number: MMC No. 87

Contract Number: NAS5-21782

BCL Subcontract Number: 72-17/G-1793

"Made available under NASA sponsorship in the interest of early and wide dissemination of Earth Resources Survey Program information and without liability for any use made thereof."

I. DATA COLLECTION

Although no satellite photography has been available on Ohio to date, sample ERTS-1 photographs of several other areas of the U. S. were provided by NASA upon request. These sample photographs were useful for acquainting State and Battelle program participants as to the quality of the MSS imagery being acquired by ERTS-1. These photographs were also useful in testing Battelle's data analysis equipment, and provided timely ERTS imagery samples to supplement the Ohio Development Department's film and ERTS model display at the Ohio State Fair.

During August/September significant progress was made in acquiring supporting aircraft photographic data. All five Ohio-ERTS study sites were photographed (1:24,000 scale) using the Ohio Highway Department aircraft. This black-and-white photography (9" x 9" format) for all sites was supplemented with Battelle's 70-mm multispectral camera (in ERTS spectral bands) and standard 35-mm Ektachrome photography. In addition, NASA Lewis (LeRC) personnel acquired larger scale (~1:10,000) photography of the Ohio-ERTS Ottawa-Crane Creek study site. All aerial imagery acquired during this period has been processed and some already used in study site photomapping efforts.

Study site ground-truth data collection efforts during this reporting period involved the initial visit to the Ohio Agricultural Research and Development Center (OARDC) site in August, and the inauguration of systematic photomapping and radiometric survey activities for the East Liberty Transportation Research Center and the Wooster OARDC sites in September.

(E72-10144) RELEASE OF ERTS TO THE STATE OF OHIO Progress Report, Aug. - Sep. 1972 D.C. Sweet (Ohio Dept. of Economic and Community) Sep. 1972 6 p CSCL 08B

N72-33303

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Major data collection problem thus far has been one of weather conditions. Cloud coverage has not only seriously limited the obtainability of useful satellite photographs over Ohio thus far, but the combination of higher than normal amounts of clouds and precipitation have also handicapped on-site data collection activities. Also, an automatic recorder for Battelle's (ISCO) spectroradiometer has been ordered but not yet received. When available, this recorder will accelerate the collection of spectral reflectivity data (.38-1.05 μm) during the limited "clear sky" days and especially coincident with ERTS overflights.

In the next two months plans are to continue with the systematic photomapping and radiometric surveys for the other Ohio-ERTS study sites. Also, a joint arrangement for data collection activities for the Lake Erie/Cleveland study site will be discussed with LeRC personnel (Drs. Mark, Schertler, et al.).

II. DATA ANALYSIS

Effort expended in this category during this reporting period involved primarily Battelle's development of the remote sensing data analysis laboratory. Specifically, the Spatial Data Systems 32 Color Viewer was calibrated during this period, and a series of equipment demonstrations given to Battelle and State of Ohio personnel. Sample ERTS-1 photography (non-Ohio) and selected aircraft study site photographs were studied using this viewer and the Richards Interpretation Module. The remaining major data analysis instrument to be installed in this facility, the Spectral Data Multispectral Additive Color Viewer System, is now scheduled for delivery in early October.

III. DCS/DCP EFFORT

The little progress made in this phase of project activity during August and September involved the preliminary design of the interfacing equipment to match the Schneider Robot Water Monitor with the DCP. Fabrication of this equipment has been delayed pending arrival of the DCP, which is reportedly now scheduled for delivery in early October.

IV. DATA UTILITY ASSESSMENT

During August and September several briefing and workshop sessions were held with key State personnel primarily from the Department of Natural Resources and the recently formed Ohio Environmental Protection Agency to acquaint them with the Ohio-ERTS program activities and developments. The plan is to provide maximum exchanges among Battelle project participants and potential state-user personnel throughout the evolution of the program to ensure accurate data utility assessment. Battelle specialists are currently developing and evaluating various relevancy assessment procedure options involving questionnaires, repeated interviewing, and data-user seminar techniques. The actual cost-benefit methodology to be utilized will be patterned from that currently being developed by the USGS.

V. SIGNIFICANT RESULTS

None.

VI. MISCELLANEOUS

A survey of information items (reports, maps, circulars, brochures, bulletins, etc.) relating to Ohio environmental and natural resource interests potentially useful to Ohio-ERTS investigators and available at State, Battelle, and Ohio State Libraries has been undertaken. The survey lists available items by organizational origin, by discipline, and by location (i.e., county and study sites).

Several Battelle remote sensing and computer specialists attended the Purdue University Remote Sensing Technology and Applications Course in August. Likewise, several Battelle discipline specialists and State of Ohio personnel are planning to attend a Remote Sensing Course offered by The Ohio State University in October.

An exhibit describing the State's ERTS involvement was prepared and displayed at the Governor's booth at the Ohio State Fair (August 17-September 4). The exhibit contained a short film describing ERTS, a model of the spacecraft supplied by NASA, and two panels with artwork and photographs describing the program. In addition, a pamphlet describing the program was distributed to visitors. A copy of this publication is attached to this report.